

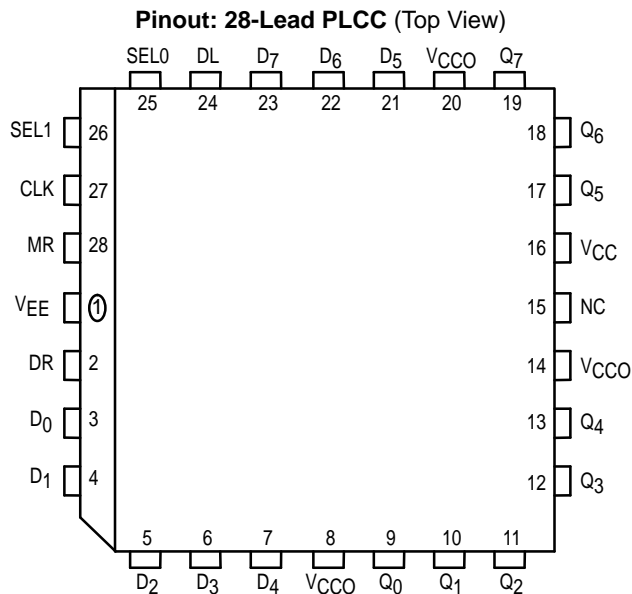
# 8-Bit Shift Register

The MC10E/100E141 is an 8-bit full-function shift register. The E141 performs serial/parallel in and serial/parallel out, shifting in either direction. The eight inputs D<sub>0</sub> – D<sub>7</sub> accept parallel input data, while DL/DR accept serial input data for left/right shifting. The Q<sub>n</sub> outputs do not need to be terminated for the shift operation to function. To minimize noise and power, any Q output not used should be left unterminated.

- 700MHz Min. Shift Frequency
- 8-Bit
- Full-Function, Bi-Directional
- Asynchronous Master Reset
- Pin-Compatible with E241
- Extended 100E V<sub>EE</sub> Range of – 4.2V to – 5.46V
- 75kΩ Input Pulldown Resistors

The select pins, SEL0 and SEL1, select one of four modes of operation: Load, Hold, Shift Left, Shift Right, according to the Function Table.

Input data is accepted a set-up time before the positive clock edge. A HIGH on the Master Reset (MR) pin asynchronously resets all the registers to zero.



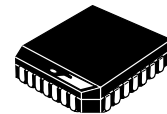
\* All V<sub>CC</sub> and V<sub>CC0</sub> pins are tied together on the die.

### EXPANDED FUNCTION TABLE

Function	DL	DR	SEL0	SEL1	MR	CLK	Q0	Q1	Q2	Q3	Q4	Q5	Q6	Q7
Load	X	X	L	L	L	Z	D0	D1	D2	D3	D4	D5	D6	D7
Shift Right	X	L	L	H	L	Z	L	Q0	Q1	Q2	Q3	Q4	Q5	Q6
Shift Left	X	H	L	H	L	Z	H	L	Q0	Q1	Q2	Q3	Q4	Q5
Hold	L	X	H	L	L	Z	L	Q0	Q1	Q2	Q3	Q4	Q5	L
Hold	H	X	H	L	L	Z	Q0	Q1	Q2	Q3	Q4	Q5	L	H
Reset	X	X	H	H	L	Z	Q0	Q1	Q2	Q3	Q4	Q5	L	H
Reset	X	X	X	X	H	X	L	L	L	L	L	L	L	L

**MC10E141**  
**MC100E141**

**8-BIT SHIFT REGISTER**



**FN SUFFIX**  
PLASTIC PACKAGE  
CASE 776-02

### FUNCTION TABLE

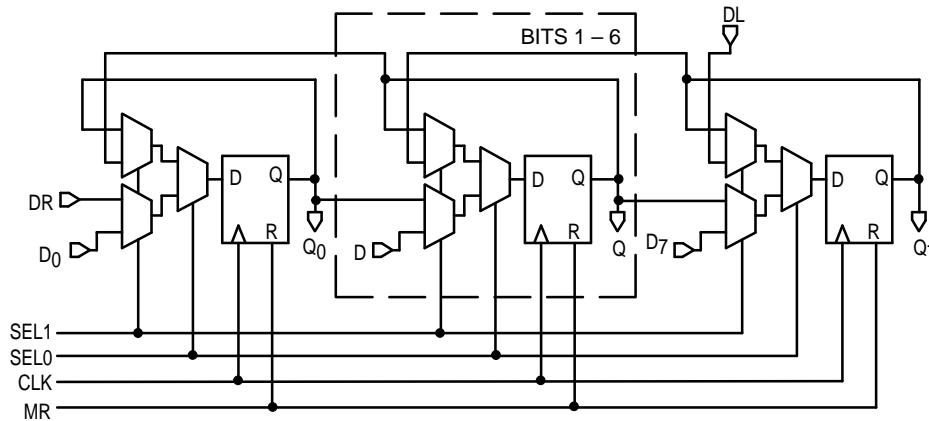
SEL0	SEL1	Function
L	L	Load
L	H	Shift Right (D <sub>n</sub> to D <sub>n+1</sub> )
H	L	Shift Left (D <sub>n</sub> to D <sub>n-1</sub> )
H	H	Hold

### PIN NAMES

Pin	Function
D <sub>0</sub> – D <sub>7</sub>	Parallel Data Inputs
DL, DR	Serial Data Inputs
SEL0, SEL1	Mode Select In Inputs
CLK	Clock
Q <sub>0</sub> – Q <sub>7</sub>	Data Outputs
MR	Master Reset



LOGIC DIAGRAM



DC CHARACTERISTICS (V<sub>EE</sub> = V<sub>EE</sub>(min) to V<sub>EE</sub>(max); V<sub>CC</sub> = V<sub>CCO</sub> = GND)

Symbol	Characteristic	0°C			25°C			85°C			Unit	Condition
		min	typ	max	min	typ	max	min	typ	max		
I <sub>IH</sub>	Input HIGH Current			150			150			150	μA	
I <sub>EE</sub>	Power Supply Current										mA	
	10E		131	181		131	181		131	181		
	100E		131	181		131	181		151	181		

AC CHARACTERISTICS (V<sub>EE</sub> = V<sub>EE</sub>(min) to V<sub>EE</sub>(max); V<sub>CC</sub> = V<sub>CCO</sub> = GND)

Symbol	Characteristic	0°C			25°C			85°C			Unit	Condition
		min	typ	max	min	typ	max	min	typ	max		
f <sub>SHIFT</sub>	Max. Shift Frequency	700	900		700	900		700	900		MHz	
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay To Output Clk MR	625 600	750 725	975 975	625 600	750 725	975 975	625 600	750 725	975 975	ps	
t <sub>s</sub>	Setup Time D SEL0 SEL1	175 350 300	25 200 150		175 350 300	25 200 150		175 350 300	25 200 150		ps	
t <sub>h</sub>	Hold Time D SEL0 SEL1	200 100 100	-25 -200 -150		200 100 100	-25 -200 -150		200 100 100	-25 -200 -150		ps	
t <sub>RR</sub>	Reset Recovery Time	900	700		900	700		900	700		ps	
t <sub>PW</sub>	Minimum Pulse Width Clk, MR	400			400			400			ps	
t <sub>SKEW</sub>	Within-Device Skew		60			60			60		ps	1
t <sub>r</sub> t <sub>f</sub>	Rise/Fall Times 20 - 80%	300	525	800	300	525	800	300	525	800	ps	

1. Within-device skew is defined as identical transitions on similar paths through a device.

OUTLINE DIMENSIONS


FN SUFFIX  
 PLASTIC PLCC PACKAGE  
 CASE 776-02  
 ISSUE D



NOTES:

- DATUMS -L-, -M-, AND -N- DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.
- DIM G1, TRUE POSITION TO BE MEASURED AT DATUM -T-, SEATING PLANE.
- DIM R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.
- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- CONTROLLING DIMENSION: INCH.
- THE PACKAGE TOP MAY BE SMALLER THAN THE PACKAGE BOTTOM BY UP TO 0.012 (0.300). DIMENSIONS R AND U ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY EXCLUSIVE OF MOLD FLASH, TIE BAR BURRS, GATE BURRS AND INTERLEAD FLASH, BUT INCLUDING ANY MISMATCH BETWEEN THE TOP AND BOTTOM OF THE PLASTIC BODY.
- DIMENSION H DOES NOT INCLUDE DAMBAR PROTRUSION OR INTRUSION. THE DAMBAR PROTRUSION(S) SHALL NOT CAUSE THE H DIMENSION TO BE GREATER THAN 0.037 (0.940). THE DAMBAR INTRUSION(S) SHALL NOT CAUSE THE H DIMENSION TO BE SMALLER THAN 0.025 (0.635).

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.485	0.495	12.32	12.57
B	0.485	0.495	12.32	12.57
C	0.165	0.180	4.20	4.57
E	0.090	0.110	2.29	2.79
F	0.013	0.019	0.33	0.48
G	0.050 BSC		1.27 BSC	
H	0.026	0.032	0.66	0.81
J	0.020	—	0.51	—
K	0.025	—	0.64	—
R	0.450	0.456	11.43	11.58
U	0.450	0.456	11.43	11.58
V	0.042	0.048	1.07	1.21
W	0.042	0.048	1.07	1.21
X	0.042	0.056	1.07	1.42
Y	—	0.020	—	0.50
Z	2°		10°	
G1	0.410	0.430	10.42	10.92
K1	0.040	—	1.02	—

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MC10E141/D

